

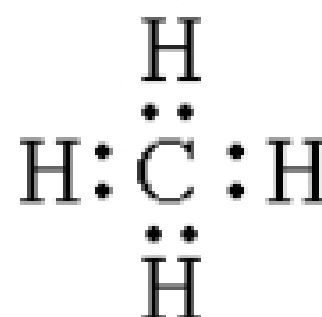
Chemistry Notes 10/28/2013

Warm Up

1. For a bond between P & O, which atom will have a partial negative charge?
 - a. Oxygen
 - i. Fluorine is the most electronegative element on the periodic table, and oxygen is closer than Phosphorus, therefore oxygen will be more likely to carry a partial negative charge

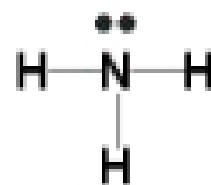
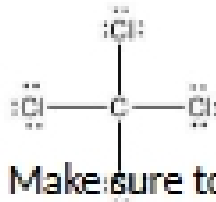
Lewis Dot Structures for Molecules

1. Identify the basic arrangement of atoms
 - a. The least electronegative element is the central atom
 - b. Hydrogen and Fluorine form **one** bond
 - c. Cl, Br, and I **usually** form one bond
 - d. Oxygen **usually** forms two bonds
 - e. Nitrogen **usually** forms three bonds
 - f. Carbon **always** forms four bonds
 - g. Ex. CH₄
 - i. Carbon is the central atom
2. Add up the total number of valence electrons
 - a. Ex. CH₄
 - i. C: 4e⁻
 - ii. H: 1e⁻ X 4 = 4e⁻
 - iii. 8e⁻ total
3. Insert electrons in pairs to bond the central atom to outer atoms
4. Check that all atoms have 8e⁻ (Except Hydrogen which has 2e⁻)
5. Check that the correct number of valence electrons have been used



Examples

1. CCl₄
 - a. Make sure to put 8e⁻ around the central atom first



2. NH₃
 - a. Nitrogen is the central atom

3. H₂O

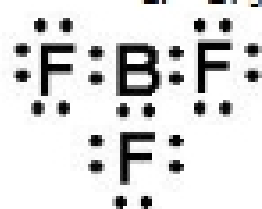


Exceptions to the Octet Rule

- Period 2 elements are the only ones that follow this trend 100%
- **Beryllium** often only has four electrons around it
- **Boron & Aluminum** often have six electrons

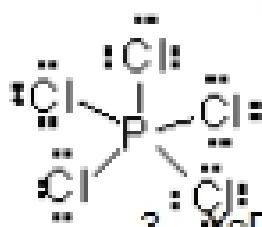
Examples

1. BF_3



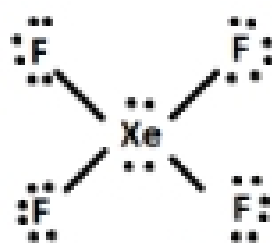
2. PCl_5

- a. There are 10 electrons in phosphorus, but **any element below the second period can have more than eight electrons** because electrons can overlap into the d subshell



3. XeF_4 ; how many lone pairs are around Xenon?

- a. 2 (Four extra electrons)



4. SF_6 ; how many lone pairs around Sulfur?

- a. 0

